

The embodiments of the invention in which an exclusive property right or privilege is claimed are defined as follows:

1. A paddle diverter assembly comprising:
an arm; and
an actuator for moving said arm from a home position to a diverting position,
said actuator being adapted to permit said arm to move away from the diverting position upon
5 impact with an object to be diverted to thereby absorb at least some of the impact between the
arm and the object being diverted.
2. The paddle diverter assembly according to Claim 1, wherein said actuator is
adapted to permit said arm to return to the diverting position after moving away from the
diverting position upon impact with the object to be diverted.
3. The paddle diverter assembly according to Claim 1, wherein said arm
comprises a driven diverting surface.
4. The paddle diverter assembly according to Claim 3, wherein said driven
diverting surface comprises a drive belt.
5. The paddle diverter assembly according to Claim 1, wherein said actuator
extends downwardly from said arm no more than 12 inches.
6. The paddle diverter assembly according to Claim 1, wherein said actuator
comprises a motor and a servo controller selectively powering said motor, said motor
permitting said arm to move away from the diverting position upon impact with the object
and forming an electric spring.
7. The paddle diverter assembly according to Claim 1, wherein said arm includes
a spring, said spring deflecting to absorb impact when said arm impacts the object being
diverted by said arm.

8. The paddle diverter assembly according to Claim 7, wherein said spring comprises a plate spring.
9. The paddle diverter assembly according to Claim 8, wherein said arm includes a medial portion, and said spring being provided at said medial portion.
10. The paddle diverter assembly according to Claim 9, wherein said plate spring includes a longitudinal extent, said arm having a longitudinal axis, said longitudinal extent extending along said longitudinal axis.
11. The paddle diverter assembly according to Claim 10, wherein said arm comprises a driven diverting surface.
12. The paddle diverter assembly according to Claim 11, wherein said driven diverting surface comprises a driven belt.
13. The paddle diverter assembly according to Claim 12, wherein said plate spring includes a longitudinal groove extending along said longitudinal extent, said drive belt having a rib, said rib extending into said groove wherein said groove provides vertical support to said drive belt.
14. The paddle driver assembly according to Claim 4, wherein said arm supports belt pulleys for supporting said drive belt.
15. The paddle diverter assembly according to Claim 14, wherein said arm comprises at least first and second arm portions, said first and second arm portions releasably interlocked, when released said first and second arm portions permitting removal of the drive belt without disassembly of the paddle diverter assembly.
16. The paddle diverter assembly according to Claim 15, wherein said first and second arm portions are slidably releasable.

17. The paddle diverter assembly according to Claim 15, wherein said first and second arm portions include a slidable joint therebetween, said slidable joint being selectively fixable wherein said first and second arm portions are interlocked and being selectively releasable to permit removal of said belt.

18. The paddle diverter assembly according to Claim 17, wherein said slidable joint comprises a dovetail joint.

19. The paddle diverter assembly according to Claim 18, wherein said dovetail joint comprises an angled dovetail joint.

20. The paddle diverter assembly according to Claim 18, wherein said arm portion comprises at least two extruded sections.

21. A diverter system comprising:

a conveying surface having a conveying direction and for conveying an article at a conveying speed;

5 of said diverter assemblies at opposite sides of said conveying surface, each of said diverter assemblies comprising an arm mounted for pivotal movement between a non-diverting position and a diverting position wherein said arm is pivoted across at least a portion of said conveying surface; and

10 a drive system for independently and selectively moving said arms between said diverting positions and said non-diverting positions wherein said arms may be sequentially or each arm may be individually moved to their respective diverting positions and wherein an article conveyed on said conveying surface is diverted in a diverting direction when the article contacts one of said arms when said one arm is in said diverting position.

22. The diverter system according to Claim 21, wherein said drive system permits said arms to move away from their diverting positions when impacting an article to thereby reduce the impact on the article being diverted and moves said one arm back to said non-diverting position after the article is diverted by said one arm.

23. The diverter assembly in Claim 21, wherein said drive system comprises a driver for each arm, said drivers being independently actuated to move said arms to their respective diverting positions.
24. The diverter assembly in Claim 23, wherein said drive system comprises a controller, said controller selectively and independently actuating said drivers.
25. The diverter assembly in Claim 24, wherein said controller comprises a servo controller.
26. The diverter assembly according to Claim 21, wherein each of said arms includes a driven diverting surface.
27. The diverter system according to Claim 26, wherein at least one of said driven diverting surfaces comprises a drive belt.
28. The diverter system according to Claim 27, wherein each arm comprises a horizontal extent, said at least one driven diverting surface comprising a belt extending around said horizontal extent, said belt being driven about said horizontal extent and providing said driven diverting surface.
29. The diverter system according to Claim 21, wherein each of said arms includes a horizontal extent and a belt extending around said horizontal extent, said belts being driven around their respective horizontal extents and providing driven diverting surfaces for each of said arms.
30. The diverter system according to Claim 28, wherein each of said drive belts is driven by a driven roller, said driven rollers driven by said drive system.
31. The diverter system according to Claim 30, wherein each of said driven rollers includes a driven axis about which said driven roller is driven, and said arms pivoting about a respective pivot axis when pivoting between said non-diverting position and said diverting position.

32. The diverter system according to Claim 31, wherein said driven axis of a respective arm and said respective pivot axis of said respective arm are generally collinear.

33. The diverter system according to Claim 32, wherein said drive system is adapted to de-couple movement of said drive belts about said driven axes from movement of said arm about said pivot axes.

34. The diverter system according to Claim 33, wherein said drive system includes a motor for pivoting said arm and a motor for driving said driven belt, said motors independently actuated by said drive system.

35. A belted driving assembly comprising:
a rigid member having a longitudinal extent along a longitudinal axis and a transverse extent;
first and second space apart pulleys mounted to said rigid member; and
5 a drive belt, said drive belt supported by said pulleys about said rigid member, and said rigid member comprising first and second portions, said first and second portions releasably interlocked at a fixed length and being releasable wherein said first pulley and second pulley can be moved closer together wherein said belt can be removed for repair or replacement.

36. The belted driving assembly according to Claim 35, wherein said driven diverting surfaces comprise driven belt.

37. The belted driving assembly according to Claim 35, wherein said first and second portions are releasably interlocked at a joint.

38. The belted driving assembly according to Claim 37, wherein said joint is angled with respect to said longitudinal axis.

39. The belted driving assembly according to Claim 38, wherein said joint comprises a dovetail joint.

40. A method of selectively diverting an object, said method comprising:
providing at least one paddle assembly having an arm;
moving the arm with a drive assembly to a diverting position; and
absorbing at least some of the impact between the object and the arm with the
5 drive assembly.
41. The method according to Claim 40, wherein said moving comprises pivoting
the arm to the diverting position.
42. The method according to Claim 41, wherein said pivoting includes pivoting
the arm with a servo controlled motor.
43. The method according to Claim 40, further comprising providing a pair of
paddle assemblies and selectively moving each of the paddle assemblies to a diverting
position.
44. The method according to Claim 43, wherein said selectively includes
individually moving the paddle assemblies.